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E. K. E. GUNDERSON

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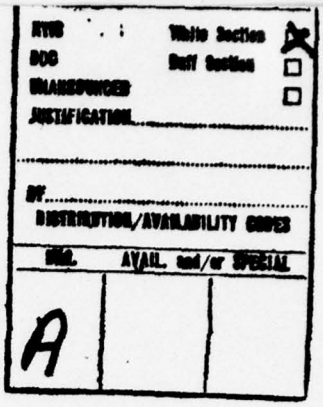

Evaluation of Rehabilitation Program Effectiveness for Young Alcoholics

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Abstract

Post-treatment effectiveness of Navy enlisted men treated for alcoholism was studied in two populations: men admitted to naval hospitals during the time periods 1966-1969 and 1970-1971 with diagnoses of alcoholism and men admitted to Alcohol Rehabilitation Centers and Units during the years 1972 through mid-1974. Both populations were divided into young alcoholics (age $\leq$ 25 years) and old alcoholics (age $\geq$ 26 years) and equations predicting effectiveness or success on return to duty were derived. Additional studies were completed on the second population comparing the effectiveness of treatment for black and Caucasian alcoholics and for men treated in Centers and Units. Effectiveness rates ranged from 40% to 56% for groups treated in hospitals with higher rates associated with older men. The variables predictive of effectiveness for all subgroups were: diagnostic subtype, pay grade, length of service, and days hospitalized. Utilizing these variables actuarial tables were constructed for both old and young alcoholics. For men treated in Centers and Units, 61% of the younger and 81% of the older men were effective. Pay grade and prognostic ratings given by treatment staff were the best predictors of effectiveness. Additional social history and

clinical variables entered the prediction equations for various subgroups. There was no significant difference in the effectiveness rates for black and Caucasian populations. Pay grade and prognosis again were the most important predictors of post-treatment effectiveness. Although ethnicity was not a factor in overall effectiveness, young black sailors in the lower pay grades and with the least time in service had a very low effectiveness rate. Men treated in Centers had a higher effectiveness rate (78%) than men treated in Units (72%). The demographic, social history, and clinical variables associated with effectiveness at Centers and Units were identified. Finally, some comparisons of effectiveness among individual Centers and Units were presented. The implications of the findings for early identification and treatment of alcoholics were discussed, and further areas of research recommended.

INTRODUCTION

In April, 1974, the Office of the Secretary of Defense requested that services be provided to conduct a study of the characteristics of and prognosis and treatment outcomes for young alcoholics in the naval service under Military Interdepartmental Purchase Request 75-OSD-O&M(A)-1301-1. This is the final report covering the research work completed in compliance with this request.

I. EXECUTIVE SUMMARY

Pay grade was a very stable prognostic indicator and demonstrated predictive value in all alcoholic populations studied, whether old or young, Caucasian or black, in naval hospitals or Alcohol Rehabilitation Centers and

Units. Pay grade reflects work accomplishment and successful adaptation to Navy life; the importance of this variable was further demonstrated in the Alcohol Center and Unit studies where demotions or missing promotions were important predictors of post-treatment effectiveness.

In the earlier studies of men treated for alcoholism in naval hospitals, diagnosis was an important predictor of outcome. Men with less severe diagnoses (acute or episodic and other and unspecified) showed a better response to treatment than men with more severe diagnoses (alcoholic psychosis and chronic or habitual/addiction). In subsequent studies at Alcohol Centers and Units diagnostic differentiations were not available so that type and severity of alcoholism was unknown except in terms of duration of drinking problems and history of hospitalization. While it was not possible to validate the usefulness of diagnosis directly as a predictor of outcome at Centers and Units, available information concerning severity of alcoholism did contribute to prediction.

In the earlier hospital studies shorter periods of treatment were associated with increased effectiveness after hospitalization. In the studies of Centers and Units longer treatment tended to be positively associated with outcome. This was because programs at Centers and most Units ran a specified course and early release would indicate a failure to respond to the program of treatment. In certain Units where effectiveness rates for men in treatment for short periods (0-14 days) were high, it is possible that the program was less structured and early release indicated rapid recovery.

The finding that outpatient status was associated with ineffectiveness for Unit patients needs further study. This result suggested that residential

programs for treatment of alcoholism are superior. However, there was an indication that men treated as outpatients in one facility were often readmitted to another facility as inpatients. Some of these readmitted patients may have been classified as ineffective; this problem is currently under investigation.

The higher effectiveness rates seen for both younger and older groups treated in Alcohol Rehabilitation Centers and Units as compared to hospital settings in earlier time periods require cautious interpretation. It cannot be assumed the higher rates are a result of more effective treatment programs alone. The existence of the new programs reflects positive changes in attitudes and policies toward alcoholics in the Navy. It is reasonable to assume that the population of alcoholics entering treatment during the past few years includes many less severely ill individuals than diagnosed alcoholics admitted to hospitals in earlier time periods. As treatment for alcoholism becomes more acceptable, alcoholics who previously were reluctant to identify themselves may be coming forward and acknowledging their need for treatment. However, there is a strong possibility that current programs are more effective than the earlier hospital milieu treatment. A great deal of time, energy, and resources are being directed toward designing programs, training counselors, and evaluating treatment efforts. In this more favorable climate, improved results could be expected with intensive treatment efforts.

Differences in effectiveness rates between young and old alcoholics, young blacks and young Caucasians, and among the various treatment facilities, particularly for younger men, indicate the need to identify the successful elements in the various programs. Alcoholics Anonymous is the major orien-

tation at many facilities. This approach, with emphasis on chronic drinking problems and its appeal to spiritual and moral values, may have less impact on the younger alcoholic. In the present studies, the Center with the greatest number of young alcoholics had the lowest effectiveness rate while facilities with small proportions of younger had higher effectiveness rates.

It is probable that the etiology and course of alcoholism is different for young and old alcoholics. Younger alcoholics admitted to Centers and Units had begun drinking at earlier ages and had experienced more difficulties in school related to alcohol. Also, there may be changes in the larger society that affect drinking patterns in young people but not older sailors. Thus, separate treatment programming might be more effective for younger alcoholics, especially if the trend toward increasing numbers of young men entering treatment continues.

The prognostic value of a number of biographical variables in predicting effectiveness for specific subgroups within the alcoholic population suggests that exploration of the backgrounds and histories of alcoholics should continue. Such investigations would facilitate early identification of those men most likely to become alcoholic and would permit differential classification with respect to response to treatment. The pathways to alcoholism may differ, not only for those who become alcoholic early in life as opposed to those who do so at a later age, but also for groups of comparable age, but different ethnic and social history backgrounds. Ethnicity was not an important factor in treatment effectiveness for blacks or Caucasians in the present study. However, the drinking histories of blacks in this Navy sample

were unlike those of urban blacks reported in other studies (1).

Prognostic ratings given by treatment staff at the completion of rehabilitation were second in importance only to pay grade in predicting outcome for both young and old alcoholics, Caucasian or black, and Centers or Units. This was impressive evidence of the Counselors' ability to evaluate potential for satisfactory performance among alcoholics admitted for treatment. Drinking behavior while in treatment was also an important predictor of outcome; men who did not drink or who did so only to a small degree were more effective. Although the prognostic ratings correlated with and probably depended upon observations of drinking behavior during treatment to some extent, the prognostic ratings, nevertheless, made an additional unique contribution to the prediction of effectiveness. Further study should be directed toward the processes involved in making prognostic judgments in order to identify the specific behaviors or characteristics of alcoholics that make such predictions effective.

In the course of these studies there were numerous indications of the need to study the relationships between alcoholism and physical health problems. Previous hospitalization for alcoholism, as well as for other conditions, and the presence of physical health problems were related to outcome for certain patient subgroups. There were suggestions that men admitted to Units had more health problems than men admitted to Centers. Finally, the presence of other health problems may mask alcoholism and obscure the seriousness of alcoholism itself, or the converse may be true.

The following recommendations for further research and evaluation are indicated:

1. The characteristics of individual treatment programs need to be assessed and related to differences in treatment outcomes.

2. Health histories of alcoholics need to be investigated to determine the medical complications of heavy drinking and their implications for prognosis.

3. The importance of alcoholism in family members for early identification and prognosis should be determined.

4. Special treatment programs for youthful alcoholics should be instituted on an experimental basis.

II. COMPREHENSIVE REPORT

The General Accounting Office has estimated that from 5% to 6% of civilian and military males of drinking age are alcoholic, which would mean a minimum of 130,000 alcoholics in the U.S. Armed Forces, including at least 35,000 in the Navy and Marine Corps. It has been estimated conservatively by Navy officials that 15% of the active duty Navy population have had serious problems because of alcohol abuse (2). The first hospitalization rate for the U.S. Navy is about 70 per 100,000 per year (3), but only a small proportion of alcoholics are ever hospitalized with alcoholic diagnoses. Many patients on general medical wards, perhaps 20 to 30%, are thought to be covert, problem drinkers. The rate of hospitalization for alcoholism in the Navy increased markedly from the 1960's to the 1970's, particularly among young sailors.

The cost of alcohol abuse in direct losses due to absenteeism and work inefficiency has been estimated by various sources to exceed $50,000,000

annually for the Navy alone. This figure does not include the financial burdens of outpatient treatment, hospitalization, disability compensation, and legal costs or indirect costs of wasted training, loss of technical skills, and replacement of senior enlisted and officer personnel.

Data collected at the Naval Medical Neuropsychiatric Research Unit (now the Naval Health Research Center) have established that the average alcoholic enlisted man was in his early 30's at the time of first hospitalization and had two hospitalizations for alcoholism of about 30 days each during his naval career. A small percentage of these men were recognized as alcoholics in outpatient treatment at a mean age of 29 years. Alcoholics in the Navy are often separated from service prematurely for unsatisfactory performance or medical reasons. The death rate for alcoholics is high largely due to a high incidence of accidents and suicides.

Navy enlisted alcoholics tend to come from low socioeconomic status backgrounds and from families with alcoholic members; they tend to concentrate in non-technical job specialties in the Navy and have histories of repeated disciplinary difficulties.

The objective of this study was to investigate the characteristics of young alcoholics and to determine prognostic indicators and treatment outcomes for both young and old alcoholics. The study should suggest strategies for early identification and treatment of alcoholism in the naval service.

Sources of Research Data

Data files for all alcoholism admissions to naval hospitals and dispensaries since July 1965 have been established and maintained at the Naval

Health Research Center, San Diego. These records include individual statistical data cards prepared at the time of discharge from hospitals and dispensaries as well as records of Medical Board and Physical Evaluation Board actions.

A second major source of information is the file of personnel losses and gains used to update the Bureau of Naval Personnel's master enlisted computer tapes. These records contain demographic and service history information, including type of discharge received and recommendation for reenlistment. All of these data records from both the Bureau of Medicine and Surgery and the Bureau of Naval Personnel are thoroughly edited, checked for accuracy and internal consistency, and prepared for research analyses at the Naval Health Research Center.

During the past decade, thousands of Navy men were admitted to naval hospitals with diagnoses of alcoholism. A large percentage of these cases (approximately 85%) were returned to full duty after hospitalization. The post-hospital effectiveness of these men could be determined through BuPers follow-up information, and special attention could be given to prognosis among younger alcoholics for whom social and medical problems associated with alcohol abuse might be less severe and more amenable to remedial efforts.

Another source of data for the study was the test battery instituted at all drug and alcohol rehabilitation facilities during 1972, called the DARTS system. During 1972 and 1973, there was a large-scale expansion of Navy treatment programs, and the DARTS data collection system was intended to provide a basis for evaluation of the effectiveness of these programs. The portion of the DARTS data system selected for study was the ARC-ARU Patient

Record administered at Alcohol Rehabilitation Centers and Units during the years 1972 through mid-1974. The Patient Record is a 57-item questionnaire which contains basic demographic information, family and social history, items pertaining to drinking and alcohol-related problems, and clinical information provided by treatment staffs. It was not possible to utilize other DARTS information during the contract period because large amounts of data were missing or of unknown quality, the data base was in process of revision, and responsibility for data collection and analysis was transferred from one contractor to another. The Patient Record data utilized in the present study included records for 2,758 Navy enlisted men.

Effectiveness Criterion. The criterion information used to establish post-treatment effectiveness or successful adjustment was similar for the two populations studied. Effectiveness was defined as being on active duty more than 180 days following release from the hospital or rehabilitation facility and receiving a favorable discharge with no recommendation against reenlistment. Ineffectiveness was defined as being readmitted to a hospital (in the hospital study) or rehabilitation facility (in the Center and Unit studies) or receiving an unfavorable discharge more than 30 days following release from treatment or receiving a recommendation against reenlistment. Men who received medical discharges from service or failed to meet the time on duty criteria were eliminated from the post-treatment effectiveness portions of the study.

Hospital Studies

Method. The population of enlisted men admitted to naval hospitals and

dispensaries with diagnoses of alcoholism was divided into two parts by time period: patients released from the hospital during Calendar Years 1966-1969 and patients released during Calendar Years 1970-1971. This division was necessary because of a change in the diagnostic nomenclature effective January 1, 1970. At that time the Eighth Revision International Classification of Diseases (ICDA-8) replaced the Department of Defense Disease and Injury Codes (DDDIC). The diagnostic categories in the DDDIC system -- Alcoholic Psychosis, Acute, Chronic, and Other and Unspecified -- were replaced in the ICDA-8 system by the categories Alcoholic Psychosis, Episodic, Habitual, Addiction, and Other and Unspecified; the two systems were not directly comparable. A second reason for dividing the population into these two time periods was the change in attitude toward alcoholic problems and the implementation of new alcohol treatment programs that began during this period. Prior to 1970, alcoholism was generally viewed as a punishable offense. Beginning about 1970 and 1971, attitudes and policies started to shift toward the view that alcoholism was a treatable condition. By 1972 vigorous efforts were directed toward encouraging alcoholics to seek treatment, and special programs were designed to serve these needs on a large scale.

The patient populations from the two time periods were further divided into young (age $\leq$ 25 years) and old (age $\geq$ 26 years) groups. Such a division provided a large measure of control over the age variable and permitted focusing attention on the younger alcoholic. Descriptive and predictive studies were then carried out on four groups: young alcoholics, 1966-1969; old alcoholics, 1966-1969; young alcoholics, 1970-1971, and old alcoholics,

1970-1971.

The variables available for correlation with the effectiveness criteria were demographic and clinical data from the individual medical data cards and service history information from the BuPers loss and gain tapes. Variables which correlated significantly with the criterion were entered into step-wise multiple regression equations for young and old groups separately in the two time periods. Actuarial tables defining subgroups with good and poor prognoses were also constructed.

Results. Pay grade (rank), days hospitalized, and diagnosis were significant variables in the regression equations for all groups. Age correlated highly with length of service and entered the equation for the young 1970-1971 group rather than years of service which was a predictor for the other three groups. Diagnosis was a dichotomized variable in both time periods: alcoholic psychosis and chronic alcoholism vs. acute alcoholism and other and unspecified alcoholism in the DDDIC system and alcoholic psychosis, habitual alcoholism, and addiction vs. episodic alcoholism and other and unspecified alcoholism in the ICDA-8 system. Diagnosis made a smaller contribution to the prediction of outcome in the 1970-1971 time period than in the 1966-1969 period. Effectiveness was more predictable for the young alcoholics in both time periods. Multiple correlations were: for the young group in 1966-1969, .44; for the old group in 1966-1969, .32; for the young group in 1970-1971, .32, and for the old group in 1970-1971, .29. Effectiveness was more predictable in both old and young groups in 1966-1969 time period. Relationships between significant variables and the effectiveness criterion

were not completely linear for the various subgroups. For this reason actuarial tables were constructed for the four subgroups utilizing relevant predictor variables. A more detailed description of differences between old and young groups and variables that predict effectiveness for both groups can be found in the attached technical reports.

Studies of Alcohol Rehabilitation Centers and Units

Method. The population of men treated in Alcohol Rehabilitation Centers and Units was divided in the following way to permit comparisons of post-treatment effectiveness: (1) age -- young alcoholics (age $\leq$ 25 years) and old alcoholics (age $\geq$ 26 years); (2) race -- black and Caucasian alcoholics, and (3) type of facility -- Centers and Units. For the first two study areas, variables from the ARC-ARU patient record which discriminated on post-treatment effectiveness for the populations were entered into stepwise regression equations. For the third area discrimination was determined by the $\chi 2$ statistic.

Differences between Young and Old Alcoholics. Differences in age and length of service reflected the division of the population into young and old subgroups. The average young alcoholic was 21.6 years old, had been in service 3.3 years, and had achieved the pay grade of E-3; the typical old alcoholic was 33.6 years old with 13.8 years of service and a mean pay grade of E-6. Caucasians made up a large proportion of both groups (89%); non-Caucasians were about equally divided between black and other ethnic categories; less than 2% non-Caucasians in the old alcoholic group were other than black. There were no differences in educational level between the two

groups. Differences in family history were reported by the two groups. The older alcoholic was less often raised by both parents (more often by relatives) than was the younger alcoholic; further, the older alcoholic was more apt to report childhood discipline to be strict while the younger alcoholic more often reported discipline as fair or easy-going.

A number of differences in alcohol history were reported. Far more of the younger men indicated that they began drinking at age 16 or younger (72% vs. 50%), and they had experienced difficulty in school because of drinking (26% vs. 8%). Older alcoholics more often reported a previous hospitalization for alcoholism (20% vs. 14%). Paradoxically, older alcoholics more often than younger alcoholics had not experienced blackouts (24% vs. 19%).

Approximately 80% of both old and young alcoholics admitted to disciplinary offenses. The older alcoholic group more often indicated a history of multiple disciplinary offenses.

With respect to the rehabilitation experience, older men were most often self referred for treatment (45% vs. 29%) while younger men were referred by superior officers as often as being self referred. Younger men drank more often while in treatment (38% vs. 16%) and were more often given less favorable prognostic ratings ("fair" or "poor") by treatment staff at the completion of rehabilitation (68% vs. 40%).

Effectiveness. Of the men who met the criteria for inclusion in this portion of the study, 61% of the young group and 81% of the old were classified as effective. The variable most clearly associated with effectiveness for both groups was pay grade. Age and years of service also increased with

effective performance but these relationships were not completely linear. The trend toward increased effectiveness with increased age was interrupted at age 21 and 4 years of service -- approximately at the end of the first enlistment. In the old alcoholic group both the youngest and oldest subjects did less well; the optimum years of service for effectiveness was 10 to 12. Young blacks had a much lower effectiveness rate than Caucasians. At the same time older black sailors had an effectiveness rate slightly higher than that for older Caucasians (84% vs. 81%).

Marital status was not a discriminating variable with respect to effectiveness in young alcoholics, but in the older group married men were more effective than single or divorced men. Men with working wives in both groups were more effective if the wives earned the same as or less than their husbands.

There were differences in effectiveness rates for both groups related to family history. Being raised by relatives or foster parents predicted ineffectiveness for both young and old alcoholics and being raised by both parents was positively associated with outcome. Childhood discipline was differentially related to outcome particularly among younger men for whom less consistent types of discipline were associated with ineffective performance.

Past alcohol-related problems were related to outcome for both groups. Previous hospitalizations for alcoholism and having blackouts were related to ineffectiveness in older alcoholics. For both groups missing a promotion or having a demotion due to alcohol were predictive of ineffectiveness. A history of disciplinary problems was related to ineffectiveness for both

young and old groups.

Men in both groups who reported no current health problems were more effective than others. Source of referral for treatment was related to outcome. Referral by a chaplain or medical officer was related to positive outcome for younger men while referral by superior officers predicted effectiveness for older men.

Two variables reflecting aspects of the treatment experience were predictive of effectiveness for both groups of alcoholics. Drinking while undergoing rehabilitation was associated with ineffectiveness, and prognostic ratings given by treatment staff were highly predictive of outcome. Young alcoholics rated as poor risks had a 39% effectiveness rate while men rated excellent had an effectiveness rate of 88%. Effectiveness rates for older alcoholics ranged from 64% for those rated poor to 89% for those rated excellent.

Prediction Equations. Pay grade and prognostic ratings were the most important variables to enter the regression equations for both young and old alcoholics. Referral source and blackouts entered both equations but the weights for the specific categories differed. One additional variable, childhood discipline, entered the equation for the younger group while seven additional variables contributed to the prediction equation for older alcoholics; drinking while in treatment and number of years with an alcohol problem were two of the most important of these. Effectiveness was more predictable for the young group: the multiple correlation for young alcoholics was .459 and the multiple correlation for the old group was .359.

Comparison of Black and Caucasian Alcoholics. The sample of men admitted to Alcohol Rehabilitation Centers and Units was divided into blacks and Caucasians. The groups were compared on demographic and biographical variables. No significant differences between groups were obtained for the demographic variables. The typical Caucasian alcoholic was 30.0 years old, had completed 10.6 years of service, and had a mean pay grade of 4.9 (second class petty officer); the typical black alcoholic was 31.4 years old, had completed 12.2 years of service, and had a mean pay grade of 4.8 (second class petty officer). Blacks were more often married and less often divorced than Caucasians. A larger percentage of blacks with working wives stated that their wives earned more than they did. Both groups had achieved 11.4 years of schooling.

There were a number of family history differences between the groups. Blacks more often reported broken homes and gave death or separation of parents as the principal cause. Parental divorce was reported more frequently by Caucasians. As a consequence of more broken homes, blacks were less often raised by both parents and were more apt to report that relatives, foster parents, or mothers alone had raised them. The presence of a step-parent in the home was reported more frequently by Caucasians. Larger percentages of blacks reported that they were "always or usually close" to their mothers (77% vs. 52%) and fathers (42% vs. 37%).

Blacks more often indicated that discipline received during childhood was severe or strict and less often stated that their parents fought frequently. A larger percentage of blacks were Protestant, considered religion important, and acknowledged frequent church attendance.

Alcohol use history was somewhat different for the two groups. Blacks reported that they were older when they began drinking and that their alcohol problems were of shorter duration than Caucasians. More blacks indicated that they had never experienced blackouts; however, they were more likely to report current physical health problems.

Effectiveness. Effectiveness rates were about equal for black and Caucasian groups, 76% and 77%, respectively. In both groups effectiveness rate increased with age, pay grade, and years of service. Young blacks with four years or less of service or in pay grades E-3 and below were least effective. Blacks in pay grades above E-4 had very high effectiveness rates. Young Caucasians, except those in the lowest pay grades (E-1 and E-2), had high effectiveness rates. Married men in both groups had much higher effectiveness rates than single men.

The early life experiences of the two groups affected outcome. Broken home due to divorce was not related to effectiveness, but parental separation was associated with a lower effectiveness rate for both groups. Blacks whose homes were broken by death of a parent had a high effectiveness rate. Being raised by mother only was associated with high rates of effectiveness for both groups, but being raised by relatives or foster parents was related to low effectiveness in Caucasians and high effectiveness in blacks. Strict discipline during childhood was related to high effectiveness in both groups, but severe discipline was related to high effectiveness in Caucasians and low effectiveness in blacks.

Both blacks and Caucasians were most effective if they reported their problems with alcohol to have existed for 10 years or more (89% and 86%,

respectively). Effectiveness was also high for blacks who indicated that the problem was of recent duration; this was not true for Caucasians. Trouble in school, demotion, and missing a promotion because of alcohol use were associated with less effective outcome for both groups. Previous hospitalization for reasons other than alcohol abuse was a positive indicator for both groups; previous hospitalization for alcohol abuse was unfavorable for Caucasians, but this was not the case for blacks.

Referral source influenced outcomes differentially for Caucasians and blacks. Referral by a clinical counselor or self-referral were most favorable for Caucasians while referrals by commanding officer or division officer were most favorable for blacks. For Caucasians referrals by chaplains or commanding officers were least favorable.

Prognostic ratings by treatment staff at completion of rehabilitation were predictive of outcome for both groups -- the less favorable the prognostic rating, the lower the effectiveness rate. For blacks, percentages effective ranged from 55% for those rated poor to 100% for those rated excellent; for Caucasians the range was 53% for those rated poor to 88% for those rated excellent. Reported drinking behavior during treatment also was related to effectiveness. Men who did not drink during treatment in both groups were most effective; as drinking increased effectiveness decreased, but this trend was not completely linear for blacks.

Time in treatment was positively associated with outcome for both groups. Men who were in treatment more than 30 days had relatively high effectiveness rates in both groups.

Prediction Equations. Nine variables entered the regression equation for

blacks and seven for Caucasians. Pay grade and prognostic rating by treatment staff were the best predictors for both groups. Two other variables entered both equations, duration of drinking problems and persons by whom raised. For Caucasians the remaining predictor variables were: drank in treatment, days in treatment, demotion, previous hospitalization, and type of childhood discipline. For blacks other variables were: reason home broken, missed promotion, and referral source. A multiple correlation of .65 was achieved for blacks compared with a multiple correlation of .40 for Caucasians.

Comparison of Centers and Units. There were significant differences between groups admitted to Alcohol Rehabilitation Centers and Units during the period of study. Men admitted to Units were slightly older, had higher pay grades, and longer periods of service than men admitted to Centers. Men admitted to Units more often reported childhood discipline as severe or strict and less often as fair or easy-going. More Unit patients reported that their fathers were alcoholic than Center patients (16% vs. 11%, respectively). Unit patients reported their alcohol problems were of longer duration than Center patients but were less likely to have had contact with Alcoholics Anonymous. More Unit patients reported previous hospitalizations than Center patients, but fewer of these were for alcohol abuse; 33% of the Unit patients were hospitalized for reasons other than alcohol abuse compared with 20% of Center patients. Consistent with this picture of more frequent hospitalizations, Unit patients more often admitted to periods of depression, experiencing blackouts, desiring to see a psychiatrist, and having current physical health problems. Unit patients less often indicated that they had been demoted or missed a promotion due to alcohol.

Although fewer Unit patients were reported by treatment staff to have drunk during treatment, Unit patients were given less favorable prognostic ratings than Center patients (58% fair or poor vs. 44%).

Effectiveness. The effectiveness rate for Centers was 78% and for Units, 72%. Effectiveness in both groups generally increased with age, pay grade, and length of service; married men had high effectiveness rates in both groups. For both groups being raised by mother only was a positive indicator and being raised by relatives or foster parents was a negative indicator. Childhood discipline perceived as severe or strict was positively related to effectiveness for both Centers and Units and easy-going discipline tended to be unfavorable for both Centers and Units. Longer duration of a drinking problem (10 years or more) was related to high effectiveness at both Centers and Units. Missing a promotion due to alcohol was highly discriminating with respect to effectiveness for Unit patients but only slightly discriminating for Center patients. Desire to see a psychiatrist was a slightly favorable indicator for Unit patients, but an unfavorable indicator for Center patients. A sizeable number of Unit patients were outpatients, and this status was associated with poor outcome.

Prognostic ratings were highly related to outcome at both Centers and Units, but these ratings were somewhat more discriminating at Centers than Units. Drinking while in treatment was an important predictor at both Centers and Units, and the relationship between the amount of drinking and effectiveness was linear for the Centers, but essentially dichotomous for the Units (78% effective for those who never drank vs. 45% effective for those who ever drank).

Length of treatment was associated with outcome but in different ways for Centers and Units. For Centers effectiveness increased with time in treatment; for Units very short periods of treatment (0-14 days) were associated with high effectiveness. Also, 31-75 days of treatment were associated with relatively high effectiveness rates at Units while lesser (15-30 days) or greater (more than 75 days) length of treatment was associated with low effectiveness rates.

Effectiveness Rates for Individual Centers and Units. Effectiveness rates were compared for four Alcohol Rehabilitation Centers designated A through D and four Units designated E through H. Effectiveness rates varied from 73% to 84% for Centers and from 53% to 83% for Units. Older alcoholics (age 26 and older) had higher effectiveness rates than younger alcoholics at all Centers and Units. Effectiveness rates fell within a narrow range for older patients at individual Centers, 83% through 88%. The range was greater among Units for older patients, 58% to 84%. Effectiveness rates varied rather widely for younger men at both Centers and Units.

For both Centers and Units effectiveness rates generally increased with age, pay grade, and length of service. Units again showed greater variability in these relationships. Similarly, married men were more effective than single men at all Centers and Units. Generally, demotions, missing promotions, and disciplinary actions were predictive of unfavorable outcome but not at all Centers and Units. Similarly, other items such as previous hospitalizations, sources of referral, and length of treatment were consistent in their relationships with effectiveness, but some variability and some reversals did occur. For all Centers and Units except one, men who did

not drink while in treatment were more effective than those who did.

Prognostic ratings given by treatment personnel at the end of rehabilitation were highly associated with effectiveness. All Centers and Units were particularly successful in identifying men with poor prognoses. Certain Centers and Units demonstrated greater predictive validity than others; Centers B and D and Unit F were particularly effective. At these facilities 100% of those rated excellent were effective and approximately 45% of those rated poor were ineffective. Only one facility, Unit E, showed a major reversal in the linear trend.

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

Post-treatment effectiveness of Navy enlisted men treated for alcoholism was studied in two populations: men admitted to naval hospitals during the time periods 1966-1969 and 1970-1971 with diagnoses of alcoholism and men admitted to Alcohol Rehabilitation Centers and Units during the years 1972 through mid-1974. Both populations were divided into young alcoholics (age ≤ 25 years) and old alcoholics (age ≥ 26 years) and equations predicting effectiveness or success on return to duty were derived. Additional studies

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were completed on the second population comparing the effectiveness of treatment for black and Caucasian alcoholics and for men treated in Centers and Units. Effectiveness rates ranged from 40% to 56% for groups treated in hospitals with higher rates associated with older men. The variables predictive of effectiveness for all subgroups were: diagnostic subtype, pay grade, length of service, and days hospitalized. Utilizing these variables actuarial tables were constructed for both old and young alcoholics. For men treated in Centers and Units, 61% of the younger and 81% of the older men were effective. Pay grade and prognostic ratings given by treatment staff were the best predictors of effectiveness. Additional social history and clinical variables entered the prediction equations for various subgroups. There was no significant difference in the effectiveness rates for black and Caucasian populations. Pay grade and prognosis again were the most important predictors of post-treatment effectiveness. Although ethnicity was not a factor in overall effectiveness, young black sailors in the lower pay grades and with the least time in service had a very low effectiveness rate. Men treated in Centers had a higher effectiveness rate (78%) than men treated in Units (72%). The demographic, social history, and clinical variables associated with effectiveness at Centers and Units were identified. Finally, some comparisons of effectiveness among individual Centers and Units were presented. The implications of the findings for early identification and treatment of alcoholics were discussed, and further areas of research recommended.